11.3.16

DEQ SITE ASSESSMENT PROGRAM - STRATEGY RECOMMENDATION

Site Name: Foss Maritime Co.

Site CERCLIS Number: (none)

DEQ ECSI Number: 2364

Site Address: 9030 NW St. Helens Road
Portland, Oregon 97231

Recommendation By: Tom Gainer, Voluntary Cleanup and Site Assessment Section, DEQ Northwest Region

Approved By: Michael E. Rosen, Portland Harbor Manager, DEQ Northwest Region

FOR MSR

Date: November 8, 1999

NOTE: This site (Figure 1) is within a 6-mile stretch of the Lower Willamette River in which the U.S. Environmental Protection Agency (EPA) conducted a sediment study in 1997. This area, referred to as the *Portland Harbor*, is between the upstream ends of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5). The purpose of this Strategy Recommendation is to determine whether a specific hazardous substance release or a specific past operation at the site can be linked to contamination documented by EPA in sediments adjacent to the site. Because of this focus, the Strategy Recommendation may omit some historical site information, regulatory issues, or further-action conclusions that might otherwise be included in a DEQ Strategy Recommendation.

Background, Portland Harbor Sediment Evaluation

In September and October 1997, EPA's contractor, Roy F. Weston, Inc., collected 187 near-shore sediment samples within the Portland Harbor area defined above. Most samples (150) were collected as shallow grab samples within the upper 6 to 17 centimeters (cm) of sediments. 37 deeper composite core samples, from depths of between 55 and 139 cm, were also collected. All samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), total organic carbon (TOC), and sediment grain size. Selected samples were also variously analyzed for organotins (TBTs), pesticides,

polychlorinated biphenyls (PCBs), chlorinated herbicides, and polychlorinated dioxins and dibenzofurans.

Based on analytical results from this study, which showed extensive sediment contamination, EPA is currently considering Portland Harbor for inclusion on the federal National Priority List (NPL - also known as Superfund).

Between late 1998 and mid-1999, DEQ examined EPA's analytical data to determine potential sources for sediment contamination in the Harbor. Potential sources associated with the most contaminated areas of sediment were sites already active in DEQ's Cleanup Programs.

DEQ categorized other areas of sediment contamination (i.e., those areas not thought to be associated with active Cleanup Program sites) by defining the areas:

- **having the highest detected concentration of a given contaminant;**
- with contaminant concentrations in the upper five percent of a given contaminant's detected concentrations; and
- having contaminant concentrations above an apparent "baseline range" most commonly detected throughout the harbor area.

DEQ categorized in this manner because there are no established freshwater sediment contaminant concentration guidelines or well-defined background contaminant concentrations for the harbor area. The contaminant "baseline range" was developed by examining the geometric distribution of concentrations for each contaminant detected. Any sediment concentrations that appeared to depart significantly from the ranges most commonly detected were suspected of lying near a potential contaminant source.

As shown on Figure 2, shallow sediment samples were collected approximately 500 feet upstream and 100 feet downstream of the Foss Maritime facility (SD055 and SD052, respectively). Sediment data for sample SD055 presented in Table 1 indicates that upstream sites are not likely impacting the subject site, since none of the tested compounds were detected at concentrations above the Portland Harbor baseline levels. The subject site may be contributing towards downstream sediment concentrations of butylbenzylphthalate and low- and high-molecular weight polynuclear aromatic hydrocarbons (LPAHs and HPAHs, respectively) that exceed baseline levels in sample SD052. The lack of these contaminants further downstream in sample SD050 suggests that activities at the Foss site and/or the City of

Portland stormwater outfall at the Foss site are the source of contamination observed in sample SD052.

Operational History

The 4.46-acre site was originally developed in 1979 for maritime maintenance and repair activities. Foss purchased the property from Brix Maritime Co. and started their operations in 1993. According to information provided by Foss, the site consists of an office building, office trailers, a maintenance building, an outdoor storage area, small storage sheds, and a maintenance barge for equipment repairs. Paint, propane, acetylene, diesel #2, gasoline, and lubricating oil are used on site.

Regulatory History

Spills

Sixteen spills from the Foss site to the Willamette River were reported to DEQ between 1995-1999. The spilled materials were generally petroleum products such as diesel, lube oil, and bilge water, originating from boat operation and maintenance activities at their dock. The quantity spilled was not clear, but typical spills were 1-25 gallons and resulted in a sheen on the river. The numerous reported spills and use of the dock for boat fueling and maintenance are likely sources of petroleum contamination in river sediment.

Underground Storage Tanks

In January 1993, prior to Foss' purchase of Brix, a release of lube oil was reported to DEQ (LUST #26-93-009). Brix conducted an investigation and removed 45 cubic yards of oil-contaminated soil; however, it is not clear why the site did not receive DEQ closure.

A 2,000-gallon gasoline UST and a 6,000-gallon lube oil UST were removed in October 1998. The remaining two 20,000-gallon diesel USTs and one 6,000-gallon lube oil UST were certified and upgraded in 1998.

Hazardous Waste

The facility operates as a Conditionally Exempt Hazardous Waste Generator.

Water Quality

The Foss facility does not have DEQ water quality permits. A City of Portland storm water outfall discharges at the northern (downstream) portion of the property, and Foss identified another "historical outfall" near the center of their shoreline. The

outfalls may have contributed towards sediment contamination observed downstream in sample SD052.

Site Hydrogeology

The site lies in the northern-most Portland Basin, a major north-southeast trending sediment filled structural depression found in the northern part of the Willamette River valley and adjoining Columbia River valley (Swanson et al, 1993). The basin is filled with recent alluvium, Pleistocene cataclysmic flood deposits, Miocene to Holocene nonmarine sedimentary rocks, and is underlain by Eocene to Miocene volcanic and sedimentary rocks that are exposed along the basin margins.

The youngest deposits are recent alluvium (silt, sand and gravel mixtures) characteristic of an active fluvial environment. These are made up of shoreline, river channel, and adjacent floodplain deposits.

The subject property lies between U.S. Highway 30 (St.Helens Road) and the Willamette River, at the base of the Portland Hills. The facility was constructed on varying thicknesses of fill comprised of fine to medium sands and silts overlying alluvial floodplain deposits. Aquifers in the fill and floodplain deposits generally are unconfined and localized due to heterogeneity of the deposits. Occurring at various depths in the site vicinity, Columbia River Basalts (CRB) underlie these alluvial deposits. Deep wells installed in fractured CRB can be very productive and important supply wells. Site elevation is about 30 feet above mean sea level.

Pathway Summary

The Foss site lies in an area of mixed industrial, commercial, and residential use. Approximately 22 residences lie within 1/4 mile of the site. The residences are located on the west side of St. Helens Road approximately 50 to 200 feet higher in elevation than the site, so surface or subsurface contaminant migration from the site to the residences is unlikely.

Site access is limited; however, trespassers or utility trench workers could potentially be exposed to surface and/or subsurface contaminants through direct contact, inhalation, or incidental ingestion.

Oregon Water Resources Department has well logs for one domestic well within one mile of the Foss site. The well appears to be approximately one-quarter mile from the site and is not likely affected by the contaminants at the Foss facility. The nearest significant wetlands are located approximately 3 miles downstream at

the mouth of the Multnomah Channel. Forest Park lies within 0.5 miles of the site.

Both recreational and subsistence fishing occur within the Lower Willamette River. Commercial fishing within the Portland Harbor is limited to a small Pacific lamprey fishery. Recreational boating, water skiing, swimming, and beach use also occur within the Harbor.

The Lower Willamette River provides habitat for 39 fish species, including populations of wild cutthroat trout, rainbow trout, and mountain whitefish. White sturgeon are plentiful within the Harbor. The Harbor is also an important migratory corridor, nursery habitat, and adult foraging area for two runs of chinook salmon, two runs of steelhead trout, and individual runs of coho and sockeye salmon.

Upper Willamette River populations of chinook and steelhead, which migrate through the Harbor, are listed as threatened species under the Federal Endangered Species Act. The Pacific lamprey is considered a federal species of concern.

Great blue herons, cormorants, osprey, mergansers, kingfishers, peregrine falcons, and bald eagles routinely forage within the Harbor. The area is also part of the wintering range for the Aleutian Canada goose. All are protected under the Migratory Bird Treaty Act. The peregrine falcon is federally listed as an endangered species, while the Aleutian Canada goose is federally listed as threatened species. The bald eagle also is a threatened species, but was recently proposed to be removed from this list.

There is little data on the nature and extent of the benthic community within Portland Harbor sediments. However, it is known that contamination in the benthos, which is a protected beneficial use, can be the source of food-chain effects that radiate up to the species listed above, including humans.

The Lower Willamette River is water quality limited for the following toxic compounds:

- Dioxins/furans (water column and sediments);
- Mercury (fish tissue);
- Pesticides (water column and sediments);
- Polynuclear Aromatic Hydrocarbons - PAHs - (water column and sediments); and
- Trace metals (water column and sediments).

DEQ's Water Quality Division is developing Total Maximum Daily Load requirements (TMDLs) within the lower Willamette River for these contaminants. A TMDL for 2,3,7,8-TCDD was established in 1991.

Conclusions/Recommendations

NOTE: As indicated previously, this review is limited to establishing a link between site activities and contamination in adjacent Portland Harbor sediments. It does not necessarily represent a thorough review of available site data, and the conclusions and recommendations presented below may reflect this limited focus.

The following conclusions are based on the contents of this review:

- Concentrations of butylbenzylphthalate, LPAHs, and HPAHs in shallow sediment 100 feet downstream of the Foss site are greater than baseline levels for the Portland Harbor. Although sediment data is not available immediately adjacent to the subject site, data from downstream samples indicates that the Foss site may have contributed towards the observed sediment contamination.

- Numerous reported spills and use of the dock for boat fueling and maintenance are likely sources of petroleum contamination in river sediment. However, the extent of Foss' contaminant contribution is not clear, as other potential contributing sources include the onsite City of Portland storm water outfall.

Contamination of river sediments in the vicinity of the Foss site may represent a threat to human health and aquatic life within the river. An Expanded Preliminary Assessment (XPA) on the subject property should be conducted to evaluate sediment contamination, potential upland site contaminant sources and past waste management practices, and to determine the extent and source(s) of observed sediment contamination at sample station SD052. Sediment sampling should include subsurface samples to further define the extent of contamination. As necessary, the XPA should present recommendations aimed at preventing potential further contamination of adjacent sediment. DEQ has determined that these actions warrant a high priority for follow-up.

There is insufficient information to propose adding the site to DEQ's Confirmed Release List or Inventory at this time.

References

DEQ consulted the following general references in preparing this Strategy Recommendation:

1. Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc. for USEPA, May 1998.

2. Foss Maritime Company's response to DEQ Site Assessment Information Request, March 31, 1999.

3. DEQ LUST Database.

4. DEQ HWIMSy Hazardous Waste Generator Database.

5. DEQ SPINS Spill Database.

6. MetroScan Property Records, Multnomah County, Oregon.

Attachments

Table 1: River Sediment Contaminant Concentrations

Figure 1: Site Location Map

Figure 2: Sediment Sampling Points

TABLE 1

River Sediment Contaminant Concentrations (1997)
Foss Maritime Co.

Contaminant	Units	Up-Stream SD055	Downstream SD052	Downstream SD050	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	16600	37600	33200	42800
Antimony	ppm	<4	<5	<5	<5
Arsenic	ppm	<4	<5	<5	<5
Barium	ppm	111	179	162	195
Beryllium	ppm	0.39	0.66	0.55	0.7
Cadmium	ppm	0.2	0.4	0.3	0.6
Chromium	ppm	19	36	32	41
Cobalt	ppm	13	18	17	19.7
Copper	ppm	19	38	36	60
Iron	ppm	29800	41500	37400	45000
Lead	ppm	9	16	13	30
Manganese	ppm	356	716	595	810
Mercury	ppm	0.02	0.05	0.05	0.1
Nickel	ppm	17	28	26	32
Selenium	ppm	9	10	9	15
Silver	ppm	0.7	1	0.7	1.4
Thallium	ppm	<4	<5	20	13
Titanium	ppm	1520	NA	NA	2075
Vanadium	ppm	72	101	93	112
Zinc	ppm	67	99	85	118
2-Methylnaphthalene	ppb	<19	50	32	150
4-Methylphenol	ppb	<19	600	21	680
Benzoic Acid	ppb	<190	<200	<200	<200
Benzyl Alcohol	ppb	<19	<20	<20	<20
bis(2-Ethylhexyl)phthalate	ppb	<73	<19	150	390
Butylbenzylphthalate	ppb	<19	297	<20	<20
Carbazole	ppb	31	100	30	100
Di-N-Butylphthalate	ppb	<19	<20	<20	<20
Di-N-Octylphthalate	ppb	<19	<20	<20	<20
Dibenzofuran	ppb	<19	30	26	100
Dimethylphthalate	ppb	<19	<20	<20	<20
Pentachlorophenol	ppb	<97	<99	<100	Detect
Phenol	ppb	<19	<20	<20	<20
LPAHs (total)	ppb	212	803	595	700
HPAHs (total)	ppb	1750	3907	1941	2400
DDTs (total)	ppb	7	NA	NA	220
PCBs (total)	ppb	<39	NA	NA	<180
Organotins (total)	ppb	<30	NA	NA	300
2,4-D	ppb	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	<5
TOC	%	1	1.3	1.1	2
Water Depth	Ft	23	37	35	
Sediment Sample Depth	cm	0-8	0-17	0-16	

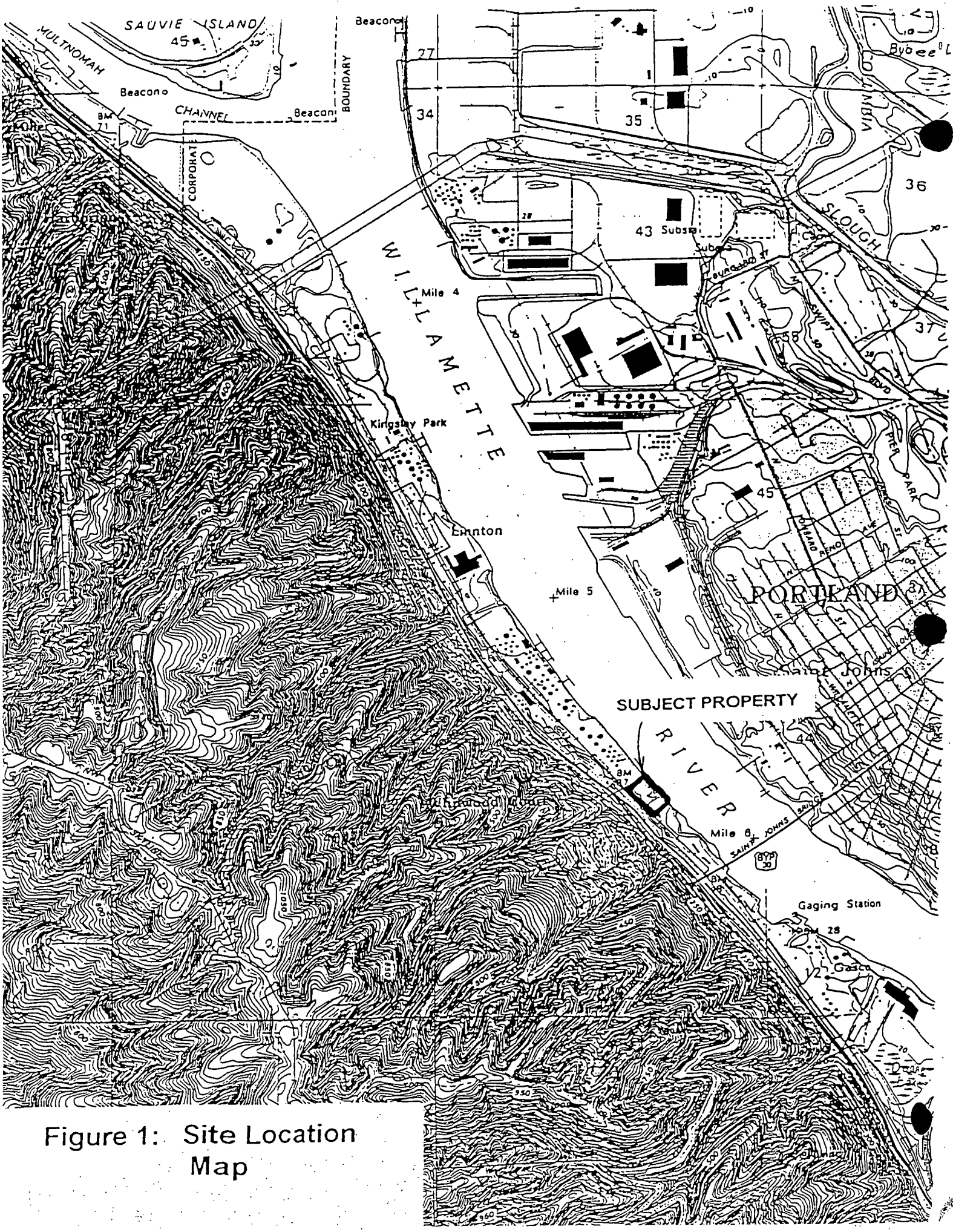

Figure 1: Site Location Map

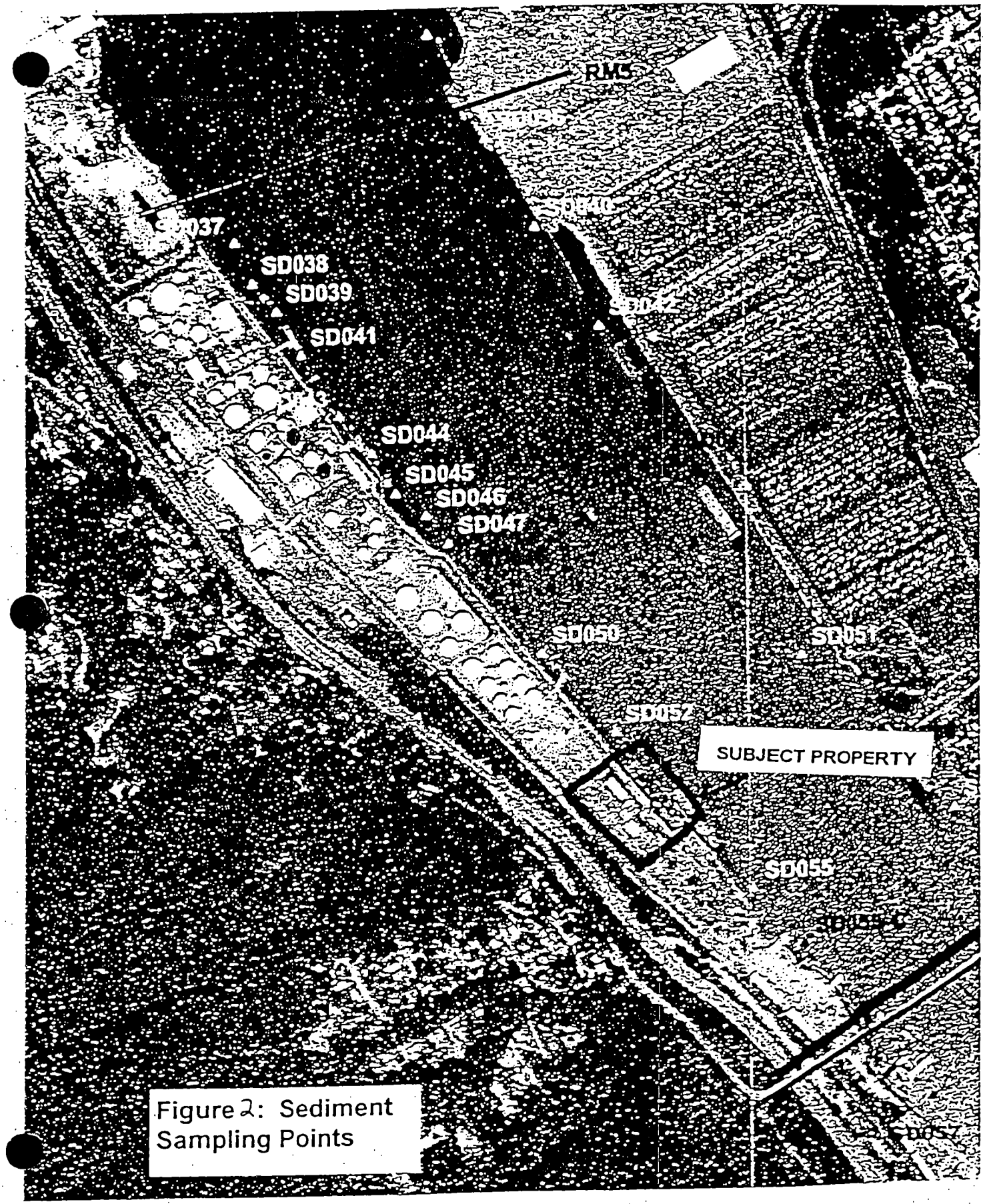

Figure 2: Sediment Sampling Points